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ABSTRACT

In lesser developed countries, interest has been growing in the role evaluation plays in the improvement of media-based education programs. Such programs include the use of television or radio to communicate a useful message to students, the general populace, or a particular group (such as mothers or small farmers). The message to be communicated may concern general academic skills (such as reading or math) or specific information (such as the advantages of breast feeding or of a particular farming technique). In lesser developed countries, such programs are usually initiated by political leaders or other high-level decision-makers as a way of attacking social problems. In October 1980 a workshop was held on methods of evaluating and monitoring media-based education programs. This document, prepared as the basic discussion paper for the workshop, reviews the role of evaluation and research in various stages of the policy-making and implementation process and stresses the need to relate evaluation to system planning as a whole, rather than confining it to summative research or to the formative development of materials. This paper has been revised to incorporate the major themes of the workshop discussions, including the participants' criticisms and recommendations. (Author/JM)

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Evaluation and research in the planning, development and support of media-based education

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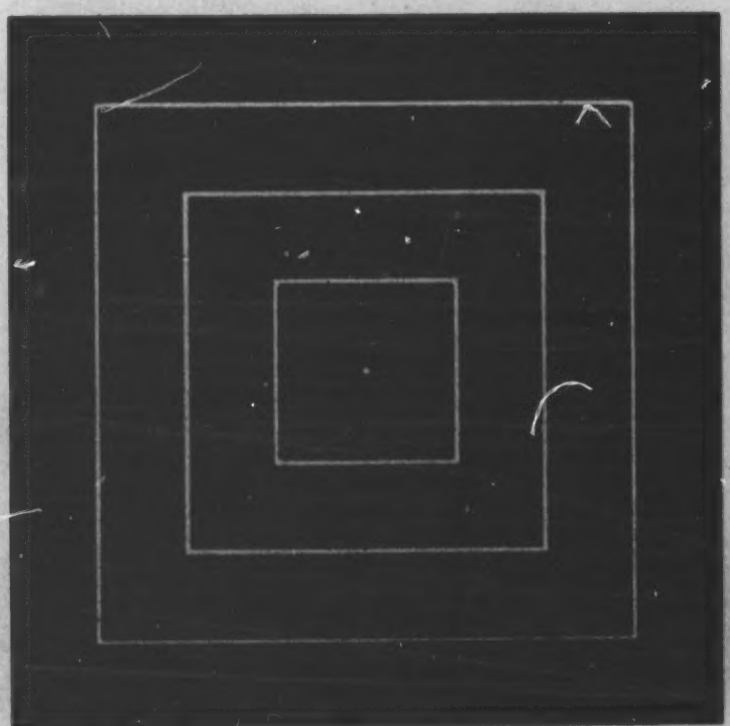
Final report of an IIEP workshop



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and
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EA 014 421

International Institute for Educational Planning
(established within the framework of Unesco)

Evaluation and research in the planning, development and support of media-based education

Final report of a workshop held
at the Learning Systems Institute,
Florida State University,
27-30 October 1980

by John K. Mayo and Robert C. Hornik

International Institute for Educational Planning

The authors are responsible for the choice and the presentation of the facts contained in this book and for the opinions expressed therein, which are not necessarily those of Unesco and do not commit the Organization

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PREFACE

In recognition of the growing interest and concern over the proper roles for evaluation in the improvement and expansion of educational media in both formal and non-formal settings, the International Institute for Educational Planning (IIEP), Paris, and the Learning Systems Institute co-sponsored a workshop entitled "Methods of Evaluation and Monitoring for Educational Media Systems" on the campus of Florida State University from October 27 through 30, 1980. The Workshop brought together twenty-seven evaluation specialists and communication planners (see Appendix A) for the purpose of reviewing current approaches to the evaluation of educational media systems, with the goal of eventually establishing a list of priority topics for intensive future study.

To stimulate discussion and debate among the participants, the Workshop's agenda was designed to be as flexible as possible (a copy of that agenda is reproduced in Appendix B). Although papers were not presented by the participants, six out of the Workshop's eight sessions paralleled sections of a discussion paper which had been prepared and distributed in advance. Following the Workshop, the discussion paper was revised to incorporate the major themes of the discussions as well as the participants' criticisms and recommendations. It is presented here as the final report of the October meeting.

CONTENTS

1.0 Introduction	1
2.0 Policy Definition	7
3.0 System Planning	17
4.0 System Build-up	29
5.0 System Maintenance	38
6.0 System Review	44
7.0 Epilogue: Additional Issues Raised at the Workshop	52
References	56
Appendix A: Workshop Participants	57
Appendix B: Workshop Agenda	59

1.0 INTRODUCTION

Educational media systems make special demands on social researchers. These demands also render the perspective of much educational evaluation theory inadequate, or at least insufficient, to the task of illuminating how research and evaluation can contribute most effectively to the planning and implementation of communication systems. "Isolating priority areas for more detailed study" so as to strengthen the relationships between planning, implementation and evaluation was the challenge put before the authors of this paper and the twenty-five other participants who attended the IIEP Workshop convened at Florida State University's Learning Systems Institute.

The bulk of this paper will treat what we perceive to be five phases of media system planning, along with the research and evaluation questions which accompany them. We will identify those stages shortly. First, however, we wish to take up several preliminary issues including: the characteristics of media systems which create special research and evaluation needs in the first place, and a brief justification for the approach we will take in dealing with them. In so doing, we recognize that the communication system planning approach elaborated in this paper is but one of the avenues currently available for both analyzing and projecting communication needs and services within a society. Its focus is upon the identification of specific objectives and the subsequent application of communication resources to meet those objectives. In this sense, our approach is highly system specific and project oriented. It differs from the alternative, suprasectoral communication planning model which begins with an extensive inventory of a nation's communication resources and needs and proceeds through the elaboration of a national communication plan and, ultimately, to the specification of sectoral objectives and

initiations (in education, agriculture, health, etc.) consistent with the overall plan.

1.1 Special characteristics of educational media

The vast majority of all educational media systems may be characterized by three factors: geographical distance, extended lead time and institutional complexity.

1) Geographical Distance. The participants in an educational media system are typically far removed from the source of the messages they are expected to use. Thus, the natural feedback provided by face-to-face interactions in traditional teaching and learning situations is simply not present except, possibly, for a small fraction of the audience. In addition to the logistical problems which this condition creates for program implementation, it creates two critical issues for evaluation. One is the need to develop adequate mechanisms for getting useful feedback circulating through the system. The second is instilling among system planners and administrators a sense of responsibility for what happens on the receiving end of a communication network.

Geographical distance tends to diminish the importance of pedagogical criteria in the assessment of program impact. Since audience effects happen at a distance, there is some tendency to equate effectiveness with artistic quality of the system's media products - television programs, radio spots, brochures, etc. This tendency also weakens the planners' concern with implementation and utilization processes, causing them to view such processes as essentially outside their control. By ignoring forces which affect the unfolding and eventual success of programs in the field, media planners are open to the accusation that their perspective is overly centralized, non-participatory in nature, and unreceptive to local initiative and control.

2) Extended lead time. The calendar of planning, system design and program preparation (and of the investments which characterize the start-up phase of a media project) is radically out of phase with the proposed calendar of program utilization. Planning and program development are heavily concentrated at the beginning of a project. Utilization activities, on the other hand, are concentrated in later phases. While all educational programs live with this problem to some extent, media projects exhibit it in the extreme. There are two telling reasons for this. First, many media projects entail substantial capital investments which must precede the initiation of a program. Once the investment in a particular technology is made, other options are essentially foreclosed. The precedent of early technical decisions is great because of the difficulty of reversing or redirecting large capital investments. This may place a special burden on researchers to inform policy-makers of the likely consequences of such decisions before direct evidence about their consequences is known. Secondly, one of the strengths of media-based education projects is their ability to amortize software investments over a number of years. The expectation that a particular instructional unit or package can be used again and again justifies heavy development costs. However, here, too, an inevitable time gap develops between program preparation and utilization. While this may also be a problem in programs utilizing other instructional aids (textbooks, for example), media-based projects typically depend more heavily on prepared materials and are thus more vulnerable to the aging process.

The time gap between program preparation and utilization, like that between investment decision and utilization, has the consequence of substantially reducing flexibility within a media system. Implications for evaluation of that reduced flexibility are two-fold. On the one hand, it demands that evaluators be realistic about the amount of change that an

already operating system will make in the short run. On the other hand, it suggests a need to concentrate evaluative efforts on those areas of a project which are genuinely open to change.

3) Institutional complexity. Educational media projects, if they are to be successful, inevitably rely upon the coordination and active cooperation of multiple bureaucratic layers and constituencies. The programs may also involve multiple communication channels, a process that frequently necessitates collaboration among public agencies or between public and private agencies that have never before worked together. They often bring together individuals of sharply different backgrounds (artists, civil servants, social scientists, engineers), and demand that such people work together productively. Such institutional and professional complexity creates special opportunities as well as special problems for researchers. In the maelstrom of diverse loyalties, backgrounds and responsibilities, the possibility of tension among people and departments is high. Breakdown in coordination, and readiness to assign blame for those breakdowns to others, must be expected. Here evaluators walk a tightrope lest they become overly identified with one group or another, and thereby risk ostracism by the others. On a positive note, the complexity of educational media projects may be substantially reduced by an internal evaluation system which provides mechanisms for the exchange of information among people whose activites must be coordinated.

1.2 A Perspective on Evaluation

Social scientific research can contribute in many ways to the improvement of educational media systems, but only a small fraction of them fit under what is usually associated with the term "evaluation." Historically,

most evaluation efforts associated with educational media have dealt with long range issues of system effectiveness and cost. In other words, did this or that project or system accomplish what it set out to do, did it fulfill its objectives? Such a perspective unquestionably adds to our understanding of particular projects and, cumulatively, if associated with process information, to the wisdom of investing in media programs generally. However, it is of little use to the projects themselves. As Hornik (1980) has written:

> In order to make a reasonable judgment about whether a given project is a success, the evaluator must wait until it has reached a relatively smooth operational stage. However, by that time substantial financial and political commitments have been made and are essentially irreversible. After generating the momentum to begin a program of serious educational broadcasting, convincing the various elements of the community to forge ahead, building the studios, and installing the transmission equipment, no one will be much interested in finding out that the project does not work. A negative report will be buried faster than it can be duplicated, unless a change in the political environment opens the system to new information.

In considering the value of research and evaluation to ongoing systems, we must first recognize some general principles. There are a very large number of decisions to be made. The character of those decisions changes as the project matures from its earliest planning stage through full implementation. Some of these decisions will be made as commands; others will be negotiated among various constituencies. The researchers' leverage will vary according to the political/technical context of the decision and to the feasibility of gathering specific data pertaining to it. Together, these conditions (and they are a small subset of a larger group of closely-related conditions which can be found in Cronbach et al.(1980) offer guidelines for the conduct of evaluation. When decision frameworks change, then so, too, must evaluation perspectives and concerns. Many of these

concerns will not be evaluative, in the sense of rendering judgments about project consequences.* Rather, they will be aimed at gaining a better understanding of the environments in which projects operate.

In the sections that follow, we argue that the utility of evaluation to educational media planning and performance rests on the willingness of a variety of actors, decision-makers as well as researchers, to assess the context in which decisions are taken, and to plan evaluation activities accordingly. In describing important research issues for educational media evaluation, we use the shifting roles of evaluation as an organizing device. Accordingly, we concentrate on the roles for research and evaluation in each of five phases of project development - policy definition, system design, system build-up, system maintenance, and system review. For each phase we identify key activities and decision-makers, assess the variety of information needs that are likely to emerge, and specify areas in which we feel additional investigation is called for. The paper closes with a brief section that summerizes additional concerns and qualification raised during the workshop.

* The term "evaluation" is frequently used to denote any research having to do with social interventions, and not just those special kinds of research which attempt to place a value on the results of those interventions or their constituent parts. However, we believe that only a small percentage of social research activities are genuinely evaluative - in that they attempt to render judgments of worth. While the boundary between evaluative and non-evaluative research may be fuzzy, it is, we believe, a distinction that ought not to be ignored.

2.0 POLICY DEFINITION

2.1 Who are the Actors?

The planning of new or expanded communication services is often begun by individuals with little working knowledge of the media or even of the specific development services they wish to improve. Frequently, the process is initiated by political leaders or other high-level decision-makers (planning commission members and the like) whose responsibilities transcend individual government ministries. As highly sensitive political actors and as generalists lacking detailed knowledge of the social issues or problems they wish to address, these individuals may be attracted prematurely to media schemes which promise quick solutions. The appeal of "technology-oriented" (as opposed to "problem-oriented") transfer activities is consistent with the desire of such decision-makers to launch highly visible and politically appealing programs.

2.2 What decisions are involved?

Initial planning activities - assuming they incorporate all decisions up to and including the promulation of an official policy and the allocation of specific resources - have two important consequences. First, they establish political boundaries for subsequent planning stages and activities. While other actors and forces may come into play later, either enhancing or reducing the effectiveness of particular systems as they approach full scale operation, the essential political character of the enterprise is set during the policy definition stage. Secondly, the decisions made here inevitably delimit the range of system options including goals, implementing institutions, target audiences, operating mechanisms and timetables. If such concerns are inadequately explored, irreparable damage may be inflicted

on a communication system before it has even left the drawing board.

In general, given the actors involved, one hopes to maximize the political commitments achieved at this stage while, at the same time, minimizing the constraints placed on system design. Obviously some aspects of project design will not be left open, since they will have become a part of the political commitment itself. Mass media, for example, may be incorporated at the outset because they promise the high visibility political sponsors seek. Likewise, certain institutions may be granted a central role in project administration because they might otherwise resist it. The direct replacement of existing field staff with a media channel may be ruled out so as to neutralize the potential opposition of that group. The essential question for us at this stage is what kinds of information will have leverage on policy decisions, and how best can that information be gathered and presented to decison-makers?

2.3 What information is required?

Ideally, the desire to develop or enlarge communication capacity within one or more development sectors should flow from the identification of concrete social needs and aspirations: the failure of a school system to offer adequate natural science instruction at the secondary level, the inability of an agricultural extension service to reach small farmers on a regular basis, etc. The list of needs may seem virtually inexhaustible, and the first requirement of policy planning may be the establishment of priorities among competing social needs. However, the choice among social needs - which is really a choice to satisfy one constituency rather than another - is primarily political, and in any case not significantly a communication policy decision. It is at the next level of policy concern - how to satisfy

a selected social need - which is our first concern.

Information requirements at the policy definition stage correspond to the types of policy decisions previously described. The first requirement involves assessment of the specific development problem to be addressed. That begins with a descriptive analysis: How widespread is the problem? What are its manifestations? It then turns to an understanding of causes and an identification of why previous solution attempts have failed.

Is there agreement among interested parties regarding the exact nature of the development problem to be addressed? For example, to the extent that an agricultural extension service is failing to serve farmers in a satisfactory way, where does the fault lie? Is it with the users themselves who may lack the knowledge and/or motivation to use available services? Could it be that the field staff lacks the experience or training necessary to work effectively with the clients in question? Could it be that the program's central administration is not backing the program with sufficient material or human resources? Or could it be that the essential program assumption - that there is information worth disseminating - is wrong? One or more of these shortcomings could account for failure and investigation may be required to determine where the true problem(s) reside. By rushing into a solution incorporating communication media without systematically examining the kinds of questions posed above, planners risk developing elegant (and expensive) solutions to insignificant or inadequately understood problems.

Regretably, a premature focus on the potential for resolving a particular problem using the media has often prevented decision-makers from adequately examining the scope and origins of the problem itself. This has led to

countless feasibility studies whose purpose more often than not has been to examine the viability of particular media-based communication strategies rather than the factors underlying a specific social problem and alternative ways of dealing with it. Until planners are encouraged to probe the underlying social, economic, cultural and/or psychological foundations of the attitudes and behavior they wish to alter within some target population, it is likely that their judgments will be predicated largely upon their personal intuitions, the advice of knowledgeable but unfamiliar foreign experts, and simple political expediency.

If policy planners can satisfy themselves that the problems they have selected to work on are genuine, and that such problems are amenable to certain kinds of treatment, they may work to develop broad project goals, responsibilities and timetables. In the case of educational media programs, the identity of a target audience and the preferred means for reaching that audience on a regular basis may be specified also. Information about the potential of alternative project configurations, about the reasonableness of goals, and about the time delays typical of such projects, is apt to be partiuclarly important.

At the policy definition phase, there is a special need for information that will support institutional planning. Communciation projects characteristically involve more than one government ministry or agency. How close do the established mandates and programs of those institutions correspond to the emerging goals of the communication initiative? In other words, do the leaders of these institutions share the perspective and concerns of the policy planners? What are the forces which work for and against long term institutional collaboration? Will the promulgation of new programs or projects necessitate

the re-allocation of existing budgets, or will new funds be forthcoming to support such activities? Given the hierarchial relationships likely to be involved, how can the policy planner be certain that the expression of institutional interest is genuine and not simply the sign of token obedience which will not necessarily be translated into effective action down the line? Where should management responsiblity for the envisioned program(s) be located? What role can coordinating bodies hope to realize? What criteria will be used for allocating resources, both for the detailed planning effort and for the actual administration of the project?

While it would be ideal if a pre-designed project could be assured of a perfect institutional niche, the reality is that most projects adapt to the strengths and weaknesses of existing agencies. The question, therefore, becomes what aspects of the alternative implementing agencies are most likely to help or hinder system design and implementation? Are competent staff available to undertake innovative projects? The answers to such questions are rarely, if ever, self-evident, and frequently dangerous shortcuts have been taken in order to comply with funding deadlines or the desire to announce some new program at a politically propitious moment.

2.4 Data sources

Adequate assessment of public policies and of the related administrative issues which are likely to emerge as part of any planning initiative depends on reliable information, information which can come from a variety of sources. What are the sources relied upon by high level communication planners? How dependable and useful have such sources been historically? Among 204 decision-makers in "policy influencing positions" within the U.S. government, Nathan Caplan (1979) found a pronounced eclectism in the search for policy guidance. Policy decisions, he found, were influenced by "information

acquired independently from diverse sources external to government - newspapers, books, professional journals, magazines, television and radio,"(p.465). When dealing with related administrative issues, however, the decision-makers were more parochial, relying almost exclusively on internal governmental reports and memoranda. Within each domain Caplan found a "great sensitivity" to interpersonal (and informal) sources of information. The dependence on such sources far outweighed the attention to empirical data.

2.5 Questions for the Research Agenda

2.5.1 Institutional Questions

So far we have assumed that (1) there is a discrete policy definition phase in communication planning, and (2) there are political actors involved in this phase whose decisions are open to information and thus are not entirely defined by the political process. The confirmation of these assumptions - or more accurately - the specifications of the conditions which make them more or less realistic, is the first order of business.

1. What are the range of decisions that are customarily made in the period before a project is officially in existence? Which of those decisions are typically fixed, and which open to modifications at a later project stage? Which decisions are politically mandated, and which open to research information? Who actually makes communications-relevant policy?

2. What types of information are both feasible to obtain and convincing enough to exert leverage on decision-makers at this stage? Do individuals engage in policy work themselves feel the need for data to guide their deliberations? What information do they now get, and what additional information would they think useful? What sources of information would they consider credible? What time and budgetary constraints operate during this planning phase which will influence the feasibility of alternative data collection efforts?

3. Do the answers to the previous questions vary with different sectors, with the character of governmental authority and overall development policy, with relationship to foreign and multi-lateral aid and technical assistance agencies, and with the degree of collaboration across governmental agencies required? More generally, is each project environment essentially unique or can some cross-project statements be made which suggest when information will be useful?

Research strategies for investigation these questions might include one or more of the following:

a. Adminstrative histories of communication projects which would utilize interviews with planning commission officials and others knowledgeable about the creation of specific programs. Such interviews would be used to reconstruct the influences and timing of major decisions in an attempt to provide answers to each of the above questions. An expensive version of this project would require a large number of interviews in each of a large number of projects. A less expensive version would require interviews with only one or two informants per project, beginning with relatively few projects. Additional projects would be examined only if there is some pattern to emerging results (not entirely unique to each case) and until there is substantial redundancy in findings (so that additional investigation would be unlikely to add very much to our understanding.)

The major risk with this strategy is tautological (e.g., the tendency to conclude that "what is, is inevitable"). If there is no instance of planners having easy access to rich and relevant information prior to making their decisions, it may be difficult to guess what difference that information would have made if it had been available. That is true whether or not planners testify that they would have used such information. In addition, it may be difficult for informants to recognize and thus articulate the influence of background knowledge - shared assumptions among planners never made explicit - on decisions.

b. A complementary research approach, designed to describe this unobserved circumstance, is more direct. Rather than writing administrative histories, it would entail providing a number of planning commissions with just such a research competence, and seeing what the result is. While such efforts would have to be relatively few, and thus make separation of the unique aspects of a given project from more generalizable results tentative, they might prove instructive.

c. Finally, the old stand by - the literature review - may prove helpful in looking at these questions across different sectors. While only some of these lessons might be directly relevant to communication programs, the effort could provide useful guidelines for future studies.

2.5.2 Methods Questions

We have described four types of data that may be helpful to decision-making in the policy definition phase: (1) description of the extensiveness of a particular social problem, (2) the etiology of the problem and its likely susceptibility to communication-based solutions, (3) likely consequences of alternative project configurations that can be envisioned at this stage, and (4) probable consequences of alternative institutional locations for projects. How to obtain the first of these, evidence of extent, is often not problematic and may not present a special problem for communication-based projects. Methods chosen will have to respect the special time constraints of this phase, however, but that is an issue that will be treated subsequently. The third area, dealing with the consequences of alternative project configuration really incorporates two sub-issues: what sort of information will be influential with policy-makers (already treated as Research Question #2 above) and what ways are there to predict the consequences of a particular project design - which will be the major research question of the next section. The essential research methods questions of this phase which remain are:

1. How does one understand the economic, social, cultural and psychological forces which maintain a particular behavior? In particular, how does one know whether that behavior is alterable by communication efforts, either in isolation, or in combination with new resource inputs.

2. What are reliable approaches for defining feasible institutional roles for various existing and newly-created agencies in the planning , development and long term operation of a particular project? How does one define the circumstances when single institutions are appropriate, and when multi-agency collaboration is required?

As before, answering these questions will require a number of research approaches. However, all of them are constrained by two assumptions. First,

time is likely to be short in this planning phase. In some cases no original field data collection will be possible. In virtually all cases, lengthy field studies (multi-year ethnographic studies, for example) will be infeasible. Secondly, expectations for a well-specified a priori behavioral model must be realistic. Social researchers never completely understand a behavior. A more reasonable goal is to specify whether a change in a behavior has some promise of being associated with a particular communication intervention.

In a sense it is misleading to focus on methods for defining a behavioral mode. The methods one can apply are reasonably well known. The question of interest here is how one organizes the application of some or all of the existing methods (literature review, expert advice, surveys and other ethnographic studies) in support of the planning process. One must develop procedures to make explicit those assumptions about how a behavior fits into its environment which are inevitably present in a proposal to use communication media for social change. The process itself may make the logical weaknesses of a program apparent. Secondly, the search for evidence concerning each of those assumptions must be commissioned so that relatively lower cost data collection efforts (literature review and expertise) are exploited before turning to relatively higher cost (in time and money) field data collection. This is particularly important because the rather sophisticated research design skills entailed in directly testing assumptions may be beyond the resources of many programs.

a. There are few examples where the statement and test of a behavioral model has preceded the decision to go ahead with a communication plan. Thus historical case studies are unlikely to yield much information about how to do this. A better result is likely to come from studying the process directly by working with a number of planning groups.

Institutional analysis relies on three activites - a clear specification of just what tasks must be undertaken in the planning and implementation of communication systems, a bringing to bear of prior international experience with alternative institutional arrangements for realizing a project, and a clear-eyed evaluation of institutional tensions and personalities in various local situations. These last two activities may suggest research studies worth pursuing, but they do not seem to fall within the mandate of this project. It is only the first, the specification of tasks to be undertaken, that would seem to make demands in the research and evaluation function of projects.

b. The problem here is to try to get planners to recognize just what activities they are expecting will be undertaken and, subsequently, to identify what institutional resources and what levels of collaboration are implied by those activities. Again, the paucity of cases where this has occurred suggests the value of a direct intervention to both implement and study the effect of alternative task analysis schemes.

3.0 SYSTEM PLANNING

3.1 Who are the actors?

Once the general outline of a communication policy has been defined, the responsibility for implementing that policy customarily passes from the high-level planning group to persons who will actually oversee the development of a workable system and who will ultimately be held accountable for its success or failure in the field. Such individuals frequently hold high civil service positions in the particular government agencies whose programs are to be expanded and/or improved. They are often found within national broadcasting authorities as well.

The training, experience and concerns of system planners are apt to be parochial and based upon experiences within single development sectors (education, health, agriculture or broadcasting). By the same token, such individuals are also more likely to understand the practical problems of mounting any new program in the field, and the resources required to do so, than are the generalist decision-makers described in the previous section. Agency officials may be resistent to any policy changes that have been decreed from on high, particularly if such changes are not the result of at least some consultation between the two levels. In short, for ownership to pass efficiently and enthusiastically from one planning level to the other, the leaders of the "user" agency(ies) must believe (or be persuaded) that it is in their interest to cooperate and that their desires and constraints have been adequately considered in the formation of new policy.

The development and implementation of a truly innovative communication program is likely to require a considerable rethinking and re-evaluation of past policies and procedures, however, and it is in this area that the experience and conventional wisdom of agency leaders may be a hindrance as well as a help. Fervent disagreement, or at least uncertainty, be provoked as policy is translated into workable program practice, but unless such disagreement or uncertainty is allowed to surface and be resolved, there is danger that the new policy will be crushed by the weight of bureaucratic precedents and assumptions. For this reason, it is essential that system planners be granted the time and resources to develop a comprehensive system plan, a plan based on fresh empirical data from the field as well as the accumulated experience and wisdom of officials at various levels. At the same time, gatherers of fresh empirical data must be aware of important limitations on their influence. We quote from Hornik (1980)

> Evaluation operates in a political environment. Decisions about social programs generally, and about the application of educational broadcasting specifically, are reached through a complex process. Whatever the actual chain of command, whether the society be democratic or authoritarian, the decision about whether and how to implement educational broadcasting will be negotiated among competing constituencies. These might include the planning staff of the person who signs on the bottom line, the entrenched educational bureaucracy and its network of power relationships, teachers, students, parents, the business community and other employers, foreign aid agencies, and other governmental entities.
>
> Each of these concerned parties will attempt to influence the shape of the decision. Each has its own values to maximize and expectations of how much influence it will be able to wield. Decisions taken in such a political maelstrom are not likely to hinge on cost-benefit ratios.

Further, there will be no single decision. Even if there is a commitment to go ahead with educational broadcasting, the shape of the program will be hammered out in negotiation among the interested parties. In that process, there will be room for information an evaluation can supply; there will also be major decision areas that will be so constrained by political concerns that the evaluator's efforts would be irrelevant.

The evaluator can help the decision-making process in this context only if he understands the political forces at work. On the one hand, he can determine which parts of the decision are open to information - those in which political interests are not at issue - and gather the appropriate data. For example, research evidence about the amount of time a child will pay attention to a program will almost surely weigh heavily in decisions about the length of in-school instructional radio programs.

Beyond gathering information to affect technical decisions, the evaluator can work in the political arena as well. By providing credible information, the evaluator can help interested parties negotiate with a clearer picture of the likely consequences, and thereby surely improve the political process. It should be emphasized that the evaluator will be helpful only insofar as he gathers information at points of leverage in the system, that is, about those issues that have not been decided upon in advance of negotiation.

3.2 What decisions are involved?

Identification of the audience or client group. Of prime importance to any communication plan is the preparation of an adequate audience profile: Who are to be the participants and beneficiaries of the new or expanded service? How do they assess their own problems and needs? Are they readily available - in schools, clinics or cooperatives - or will substantial effort have to be made to reach them, either in groups or individually? How familiar are they with the information likely to be contained in the program? Can interest be assumed or will it have to be stimulated and channeled by the program? What is known about the way a particular audience is likely to receive and ideally respond to a communication system?

In practical terms, how great a disposition to change is there within potential client groups? How compatible are existing attitudes and behaviors within the audience with the content which is likely to be presented? What factors sustain such attitudes and behaviors at the local level? Many of these questions would have been addressed also in the previous stage but in lesser detail.

Selection and balance of communication channels. Having assessed the availability of a potential client group and the strength of its existing attitudes and behaviors, the way is clear to consider what combination of communication channels will be employed to reach that audience. Even in those instances where an a priori decision has been taken to make some medium, say radio or television, the primary means of instruction (the "master medium" in Tiffin's and Coombes' words), the selection of and investment in supplementary communication channels can be as critical a planning decision. Such a decision must be based on a variety of considerations including: the access of potential users to particular media, their prior experience with and attitudes toward such media, and the ability of the sponsoring agency to provide supplementary channels on a reliable and sustained basis.

Message design and presentation. A similar set of concerns arises in the selection, ordering and actual presentation of the information which different channels will be expected to carry. Knowledge of audience abilities, habits, expectations and needs coupled with a clear set of communication objectives (e.g., will the intent of the program be to persuade as well as

inform, to instruct as well as motivate?) constitute the critical bases upon which preliminary content decisions can be made. From such decisions should also flow guidelines to help content experts and production personnel (writers, producers and directors) establish tentative norms for the length, frequency, complexity and pacing of their message.

Message reception and utilization. How members of the audience receive and use new information at the local level is likely to be as important a determinant of program success as the appropriateness and appeal of the information itself. Questions here encompass a broader institutional focus than those of physical access already discussed. They stem from our assumption that communication services must complement the provision of mechanisms for the expression and realization of new knowledge, attitudes and practices. Project sponsors must be prepared to deal adequately with success or be sure that someone else will. Does the agency have the requisite resources in place to respond to enhanced client demand? How quickly will it be able to respond to heightened expectations? The answers to such questions suggest the need for a careful analysis of existing response capability as well as a projection of the costs and delays likely to be incurred in expanding such capability.

3.3 Where can the information be found?

Answers to the variety of questions posed above are most frequently found within the sponsoring agencies themselves. They may be contained in officially commissioned studies or in administrative memoranda and intra-agency reports. Such sources tend to be self-serving in administrative

terms, and they rarely depart from conventional modes of defining a particular organization's constituencies - school teachers and administrators, doctors and health workers, agricultural extension agents, etc. Also, when such documents deal with the supposed beneficiaries of the respective services, they tend to deal in strictly quantitative terms. Rarely is any attempt made to probe qualitative differences among the client group, much less to relate those differences to current needs.

A second source that is frequently relied upon to guide system planning is outside experience and expertise. This can take various forms, from a simple review of projects elsewhere to the full incorporation of experts from various bilateral and multilateral agencies in the planning process itself. These strategies permit the planners of new systems to make use of conventional wisdom on a world scale, and they are likely to prevent repetition of the most glaring errors that have beset other projects, but they are unlikely to instruct planners as to what will work best in their own environment.

Still another strategy for obtaining vital planning information involves mounting a prototype or pilot version of a system one would hope to see enacted eventually on a large scale (example: Nicaraguan Radio Math). Such an approach has many benefits in that it theoretically permits both strengths and weaknesses of any plan to be identified before it is implemented on a broad scale. Such efforts can be closely monitored so as to determine the right combination of resources necessary to meet a specific objective. In the final analysis, however, prototype or pilot projects are usually unrealistic from a planning standpoint. As much effort and

money may be required to mount the pilot as to launch the first stage of an operational system, and many planners simply do not have the flexibility or budgets to undertake what are essentially experimental programs. Such pilot programs, given the political and financial commitments required to initiate them, may be as unmodifiable as projects which start up without an identified pilot phase. Also, there is real risk that the special conditions arranged for a pilot program make them unrealistic tests of how operational projects would survive under what are invariably less favorable conditions.

The problems surrounding pilot projects illustrate the kinds of trade-offs which educational media planners inevitably confront at the system design stage. Planners are faced with a multitude of decisions to make, which, once made, set in motion policies whose character and momentum may be very difficult to alter later on. The need for informed decisions is acute. At the same time, planners may be operating within a political mandate whose direction and timetable are already set. Under the latter circumstance, research of any kind may be viewed as at best a diversion and at worst a waste of resources or as footdragging by the program's initial advocates. Are there ways in which the common rush through system planning to implementation can be tempered to the benefit of all concerned?

The planners' desire to enact new projects as expeditiously as possible may also impede their communication with and understanding of the very individuals or groups they hope to influence. Much has been written in recent years about the non-participatory nature of planning and of social research. Hall (1978) and others have adequately documented the shortcomings of the sur-

vey instruments researchers have used to diagnose various educational problems and needs. What has been missing in planning and in social research, according to the critics, is a willingness on the part of investigators to share their findings with their subjects or to let the latter play a meaningful role in the analysis of their own situation and needs.

But to "expand the framework for planning beyond the safe haven of government officialdom and 'experts,' both native and foreign, is to introduce problems and delays which most planners find intolerable," according to Mayo (1980). "First, there is the problem of representativeness: Who is to speak for the eventual recipients of the envisioned communication service? Second, there is the problem of consensus: Even if representatives of the potential client group can be identified, do they know what they want? Third, there is the problem of efficiency: Will not the costs and delays be increased too much by trying to broaden the planning framework?" We can add here the problem of disinterest; the institutional rewards for stimulating participatory planning may be few. Satisfactory resolution of such issues may require substantial investments of both time and money. Yet failure to identify and strengthen the bases of popular support for any new program at the system planning stage may seriously reduce that program's chances for eventual acceptance and success.

3.4 Questions for the Research Agenda

Insofar as planning issues have been incompletely resolved in the policy definition phase, they must be treated in the system design. The central question in the system design stage continues to be the definition of a behavioral model. Although the actors are now different, questions of

institutional responsiveness to information remain critical. However, there is a new aspect of institutional responsiveness which can be raised at this stage, and it is the first of our research issues.

1. Participation, as a means and end of communication planning, is a concept which begs for explication and analysis. In short, what range of processes and outcomes do people have in mind when they call for more participation. Participation by whom, and for what? In terms of educational media, specifically, in what ways can planners broaden the base of their deliberations? What kinds of linkage arrangements can now be proposed to facilitate communication between planners and local groups to assure that the former are acting responsibly in the latter's behalf and that the latter are adequately prepared to accept and ultimately profit from new communication initiatives?

2. A subsidiary research question points more directly at evaluators. We have argued (consistent with Cronbach, et al. 1980) that successful evaluation is evaluation that adequately informs each constituency with a legitimate interest in a social program so that it can negotiate knowledgeably for its interest. Just as one wants to be able to specify participatory planning strategies, participation by each constituency in the definition of what evaluators are to study is also worth striving for. How one does this and what impact it has on project design is a vital research question.

Specific strategies for answering each of these research questions might include the following:

a. An attempt to define just what is meant by participation with regard to communication projects, and what the results of such participation are expected to be. A review of the essays which argue for this is a first step. Greater benefit could probably be achieved by examining, at least second hand, the organization of projects deemed participatory by their supporters or other informed observers.

b. A second approach to participation would involve a sustained examination of reported examples of participatory planning, both in more and less developed countries. Are there instances in which projects have successfully incorporated representatives of the projected client group in the planning process? Alternatively, are there instances in which the initiative for planning has emanated from local groups and subsequently been amplified through the incorporation of specialists from outside the local arena?

c. A third strategy, deriving from the first two, would involve the insertion of promising participatory planning methods into situations in which leaders were receptive to such innovation, and then evaluating the results.

Participatory planning strategies may provide useful guidance to system planners or they may - and this is the more likely outcome - clarify just what the key planning research questions are for the several constituencies, while not providing complete answers to those questions. The next step, whether or not preceded by participatory planning, will be research aimed at specific questions whose answers will guide design decisions.

3. What is the objective validity, precision and cost associated with alternative methods for obtaining information? Each of the information gathering procedures available to communication planners at the system design stage - survey data, results of pilot studies, experienced informants, outside experts and client group participation- can produce answers to most of the planning questions listed above. However, each answer will vary according to its validity and precision, its credibility to planners and other constituencies, and the resources (time, budget and expertise) required to produce it. As we have already stated, the contribution that information of a given kind and quality will make to planning will be constrained by the idiosyncracies of each situation. Nonetheless, knowledge of the quality and cost of alternative strategies for answering particular questions will be very helpful both to planners and to researchers.

4. Many projects gather reams of data as a guide to planning. For most, however, it is difficult to detect any important effect of the information in actual planning decisions. Why is that? What research planning process is likely to improve the definition of research questions, so that the relation between the data gathered and the decisions to be made is well understood?

Research strategies for answering these questions might include one or more of the following:

d. Case studies of design decisions across a variety of educational media systems would help to discern patterns of use of alternative information sources. Satisfaction with available information and a description of unmet information needs might also come from in-

depth interviews. However, it will be difficult to separate dissatisfaction with inadequate methods from dissatisfaction resulting from poor procedures for linking decisions to research activities.

e. Work directly with new project planners and researchers, building on whatever was learned from the case studies to test promising procedures for linking decisions to research activities.

f. Provide additional funds and technical assistance to a small number of projects (simultaneously with (e) above) to test alternative methods for gathering information and using it in the planning of educational media projects. This should be preceded by extensive review of existing experience with alternative research procedures, both in the published literature and in the experience of major communication projects. Questions of cost in time and budget, required evaluation expertise, validity and precision, and of the ability to describe variation as well as central tendency would each be worth studying.

As a closing note, we recall that no matter what the amount of data available, it is inevitable that major decisions will have to be made without complete information. Ironically, when such information finally does become available, major project decisions have already been made and are probably irrevocable. Despite this condition, cross-project investigations of the kind suggested above could go far to reduce the magnitudes of uncertainty surrounding decisions at the system design stage.

The major result of the system design stage and the social research strategies contained therein should be a comprehensive plan consisting of: a target population, a list of key attitudes and behaviors of that population which are to be addressed, a communication strategy to influence those attitudes and behaviors, and a timetable for identifying, preparing and putting to use all the resources necessary to accomplish the original policy objectives. This is a tall order and one which has rarely, if ever, been met by planners to a level of specificity to prevent major adjustments

from occuring once the program itself has been implemented. Experience suggests that major revisions will and should occur within all the above areas as a new communication system is subjected to the demands and strains of the real world. Given this fact, it is appropriate to judge system designs not only by their thoroughness and by the fidelity with which they are eventually implemented, but also by the models of change they posit and by the guidance they provide administrators and evaluators for testing and modifying the critical assumptions and relationships contained in the models themselves.

4.0 SYSTEM BUILD-UP

4.1 Who are the actors?

Once planners within the agency charged with system design complete their work, they customarily turn over responsibility for implementation to a project staff. Ideally, the planners will turn over a detailed system model, including a rationale for why and how a successfully functioning project will actually affect people in the field. In fact, it is useful to divide the system design phase from the build-up phase at the point that such a model is specified, although we recognize that in many cases the detailing of the model will be left in the implementers' hands.

Assuming that the behavioral model and the operational model have been adequately spelled out, it is the researcher's job, in collaboration with the project administrator, to verify components of the model as the system becomes operational and to identify any weak aspects of it. Although not all managerial problems can be identified during the build-up period, research at this stage can identify deficiencies and, at the same time, provide useful information to guide both the redesign of system components and the manner of their deployment. In an effort to make those propositions explicit, we present a hypothetical example in the next section.

4.2 What are the decisions, what information is needed?

Let us assume that a program is begun to lengthen the months of infant breast-feeding among mothers in semi-urban areas. The behavioral model defined by planners assumes (and ideally the assumption has been verified) that the decision to curtail breast feeding is in many cases the result of a belief that bottle and breast-feeding are identical in their health consequences, and an attitude among women that their peers would look down on them if they continued breast feeding beyond a certain point. (We have no

data ourselves that suggests that this is an adequate model.) Planners might then describe an operational model which depends on a radio advertising campaign to change beliefs about the relative health benefits of breast and bottle feeding, and on local health aides to organize discussion groups of mothers-to-be to reinforce the radio message, and reverse both the perception and the reality of peer pressure to give up breast feeding. In Figure 1 we present part of an operational model that might have been specified by planners of such a program.

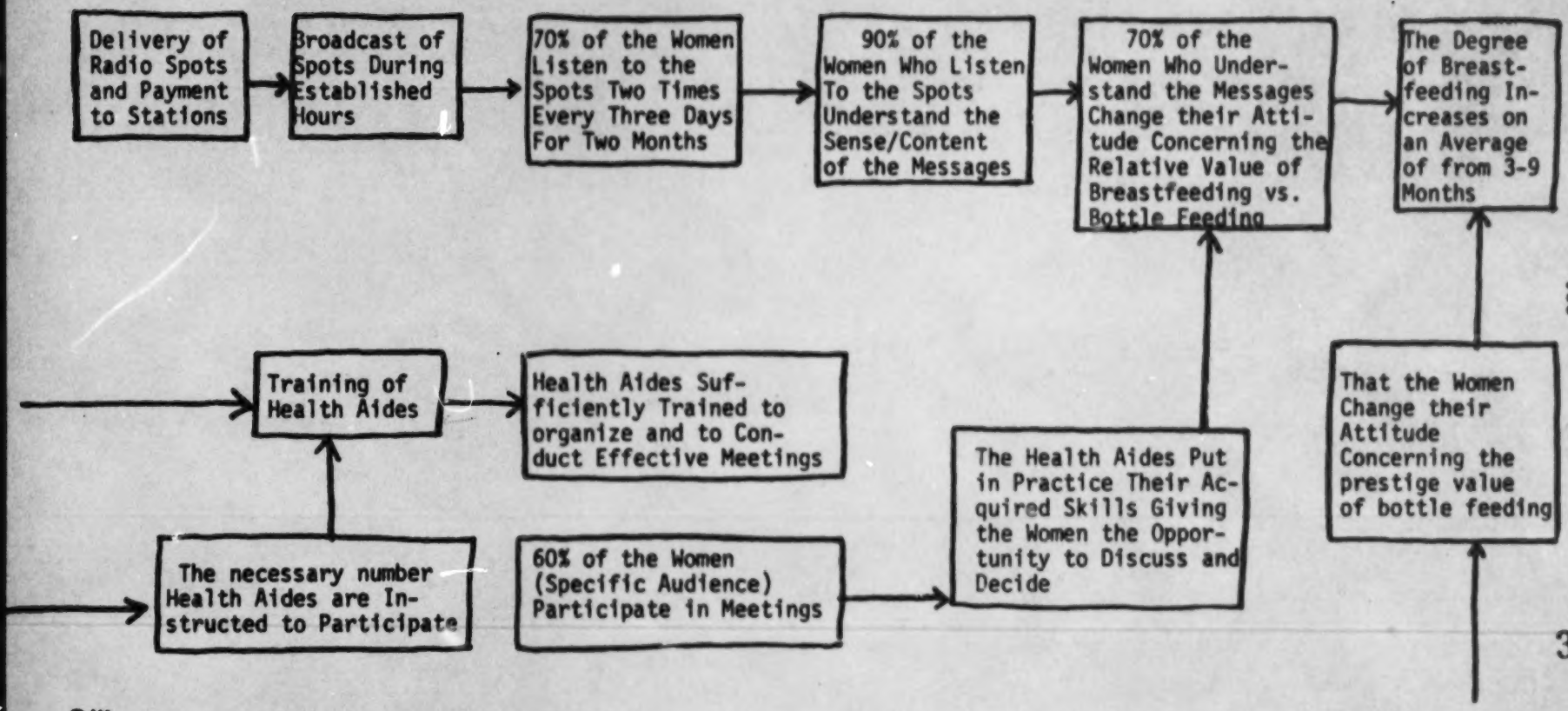
Obviously many important activities are excluded, and the activities described in each box could be broken down into linked sub-activities. However, for the purposes of an example, this is sufficient. Each of the arrows represents a hypothesized link between two activities the project wishes to realize. If one delivers radio spots and payments to selected radio stations, the spots will be broadcast at the specified times. Each of these links is subject to verification. Is it really true that if women listen to the spots regularly they will understand the content? Will group sessions with the health aides reduce women's perception of bottle feeding as prestigious?

The typical evaluation, we have said, asks only "did it work?" In this situation: did all these activities as a whole, affect breast feeding behavior? The problem is that a negative answer to that question gives no guidance to project administrators. They do not know what to change. In contrast, attempts to verify each of the links in the system independently of the existence or contribution of each of the others, may enable administrators to pinpoint needed modifications.

While we say that the responsibility of the researcher is to verify

Figure I

PARTIAL MODEL FOR A BREASTFEEDING COMPAIGN:
(adapted from materials used at the Latin America Conference on Nutrition Education)


Delivery of Radio Spots and Payment to Stations
Broadcast of Spots During Established Hours
70% of the Women Listen to the Spots Two Times Every Three Days For Two Months
90% of the Women Who Listen To the Spots Understand the Sense/Content of the Messages
70% of the Women Who Understand the Messages Change their Attitude Concerning the Relative Value of Breastfeeding vs. Bottle Feeding
The Degree of Breastfeeding Increases on an Average of from 3-9 Months
Training of Health Aides
Health Aides Sufficiently Trained to organize and to Conduct Effective Meetings
The necessary number Health Aides are Instructed to Participate
60% of the Women (Specific Audience) Participate in Meetings
The Health Aides Put in Practice Their Acquired Skills Giving the Women the Opportunity to Discuss and Decide
That the Women Change their Attitude Concerning the prestige value of bottle feeding

-30A-

each of the links in the planner's model, we must first recognize the context within which such activity takes place. The job is complicated by the rapid mobilization of material and human resources as production and distribution activities get underway. The organization of the field activities is time consuming to the extent that it reduces enthusiasm for verification activities. As the scheduled inauguration day approaches, the pace of activity reaches a feverish pitch. New equipment is installed, personnel activities at various levels must be coordinated, materials begin to flow in torrents from production centers to the field. The demands on program administrators are almost always overwhelming.

Aside from the problem of intensity there is a problem of time and resources. The links described in Figure 1 are only a small portion of the many that are essential to a project and thus worthy of verification. Literally hundreds of discrete researchable questions can be identified, and the staff and budget assigned to the evaluators can not possibly match those demands.

What is a researcher to do? First, avoid the temptation to withdraw during the tempestuous implementation period, wait for the dust to settle, and only begin work when system operations have been stabilized and regular patterns of utilization have emerged. If the researcher's only task was to assess project impact, that might be reasonable. If it is to verify the usefulness of the operational model in detail, research must begin earlier. Second, develop a list of the links which are crucial to project operations, and about which some doubt exists. If a link is deemed non-essential, or if all parties are confident of its existence, verification will naturally have a lower priority. Priority must be assigned to activites which are at least potentially modifiable. Third, recognize that commitment of resources

to one research effort reduces resources available for others. Consider a range of research approaches, and adopt the lowest cost one which can provide an acceptably credible answer. Research should be used to reduce uncertainty about a link, not eliminate uncertainty altogether. Finally, use strategies that permit looking at the link between two activities without requiring that all other activities be in place simultaneously.

Two applications of the above criteria to the hypothetical breast-feeding campaign may provide useful illustration. Will the delivery of radio spots and payments to radio stations actually result in the broadcast being aired at scheduled times? One could verify that link by paying individuals to listen and keep a log of when the scheduled broadcasts begin. Or one can assume that broadcast stations will treat all paying advertisers alike, and then interview regular advertisers as to their experience. This second strategy entails some risk - regular advertisers may be treated differently than social advertisers - but it is much less expensive, and it may provide adequate indication of trouble ahead. By keeping the costs of verification activities down, resources will be available for other efforts. Also, by obtaining the information before a campaign goes on the air nationally, modification may be possible before any damage is done.

Verification that women will change their attitudes about the prestige of bottle feeding as the result of group discussions with their peers may also be desireable. Furthermore, it would be worthwhile to verify such an activity independently of the related issues of recruitment of participants and of training of health aides to lead the discussions. While each of those activities are essential to the model, it would be helpful to be able to avoid confounding the three issues. To estimate the result of group discussion run according to plan, researchers might arrange a half dozen

prototype meetings with representative groups of the target population. Each would be led in the prescribed manner. Before-after testing, even without a control group, would provide some sense of the discussions' effectiveness. Ideally, long term effects ought to be estimated as well, but if they are expected to occur only in the presence of the reinforcing ad compaign, those efforts may be unobservable until actual implementation of the system. While this is not a low cost research strategy, it does permit some reduction of uncertainty about a given link, while allowing modification of early activities (like training of health aides) before too much has been invested in them. Of course, many verification activites will have to await fuller scale implementation - for example, the effectiveness of recruitment activities in bringing large numbers of women to discussion groups. The uncertainty reduced by a test under pilot conditions would be minimal.

4.3 What are the Research Questions?

Institutional issues

1. How can system-implementation research best be organized and applied? How can adequate human and material resources be marshalled to created such capacity within new communication projects? How can project administrators and staff be brought into the verification process, both as sponsors, as definers of research priorities and as users of information. In sum, how can such studies be effectively linked to the behavior of administators and other program participants so that their decisions will be based on progressively more sophisticated understandings of the processes and resources they control.

Obviously, there will be pressures which occasionally will send researchers off on tangents of their own, or close administrators' eyes to all but the logistics of program implementation. It is the definition of those pressures which both establishes some limit on the practicability of this model verification approach, and which suggests possible institutional procedures for living with them. This suggests the following research

approaches:

a. There are a number of projects which have relied on research to help shape implementation: SITE, Sesame Street, Nicaragua Radio Math and The British Open University come immediately to mind. Such experiences might be contrasted with those of projects which either tried to incorporate research and failed, or made no provision for implementation research to begin with. The goal would be: to identify those forces which work against project implementer/researcher collaboration; to gain a better sense of the utility of information researchers can gather at this stage; and to provide some proposals for how best to augment model-verification activity in the future.

b. As a follow-up to these case studies, several direct efforts to realize researcher/implementer colloboration could help to define further the value and limits of model verification research. By providing expertise and budget supplements to perhaps 3-6 projects, investigators would be better able to see just what is entailed in developing this capacity, and in what circumstances it has real value.

Methods Issues

In general, the issue here is: what are the appropriate methods for doing model verification research? The range of design and measurement alternatives is broad. But constraints of time and money in the context of a large number of links worth verifying produce a need for minimal cost research strategies which still achieve adequate credibility. This demands considerable methodological judgment and sophistication. Abandonment of cookbook criteria for selecting research designs burdens the researcher with the task of judging the loss in inferential power associated with given design and measurement compromises. Some would argue that this need for methodological sophistication makes the adoption of the model verification approach impracticable in many applications. They may be right, however it may be possible to lessen the need for such judgments or compromises if well-tested alternative approaches to verifying commonly observed links in typical operational models are available. Message and materials pretesting is one such well-established area. Another is establishing listenership levels. There may be methodological

problems which are common to more than one verification issue. For example, obtaining representative samples of the target population is frequently necessary. Observation of group meetings or classroom activity is commonly required. For these typical verification and methodological problems and others like them, there are a range of approaches of varying cost available.

> 2. The research question is what quality of answer can be bought for what resource expenditure. The goal, while respecting differences in applicability across different situations would be a guidebook organized around typical research questions and describing a range of research approaches with assorted estimates of their usual validity and cost.

To illustrate this research issue we return to the example of pretesting materials. Rare is the communication plan that does not call for some increase to be made in the amount of information available to some sector of a society or to the society at large. The messages may be of various kinds, verbal as well as non-verbal, and they may be organized or "packaged" in a variety of ways. No producer, no matter how expert or experienced, can be sure that the messages he or she produces will have the effect intended on an audience unless they have been tried out on members of that audience. Various techniques have been used to pretest messages before distributing them to a large audience. Peer ratings are a natural and effective way to judge whether or not messages fulfill the expectations of fellow producers and are comprehensible to them. If the messages are not comprehensible to this group, the odds are slight that they will be comprehensible to a wider audience. The attractiveness and motivating potential of messages can also be rated by outside experts, but here judgments must be considered only partially valid. The levels of understanding and the aesthetic sensiblilites of a program producer or media critic are likely to be far more acute than the average audience member's, rendering the

former's assessment of message appeal or potential impact only partially useful as a guide to future program development.

One way program formats have been pretested without incurring excessive expense is by actually presenting prototypes to representatives of the potential audience, either at production headquarters or in the field. The evaluation unit of the Children's Television Workshop, for example, developed a variety of studio-based techniques to pretest program formats for both Sesame Street and the Electric Company. Such measures included physiological as well as cognitive and attitudinal indicies of message appeal and comprehension. The information gathered allowed television producers to reformulate program formats and modules more closely attuned to the tastes and viewing habits of their young audiences.

The evaluators of SITE tried to carry the Sesame Street model one step farther by actually pretesting their programs in rural Indian villages. To do this, they transported videotape recorders to the field to reach potential audience members in as natural a setting as possible (Mody, 1976). Regretably, the logistical requirements of moving cumbersome and expensive studio equipment into the field undermined the naturalness of the test and, one suspects, the validity of the results as well. However, the strategy was worthwhile, for it did call attention to the need for simpler pretest strategies that could simulate as much as possible the viewing conditions that SITE broadcasts were likely to encounter in the villages.

We would suggest two approaches to realizing this guidebook to alternative research strategies:

> c. The first task is codification of existing experience. By a review of cases - both through the published literature, and interviews with individuals involved with given projects - it would be possible to describe the research questions that repeat

across projects. How to do pretesting, how to estimate listenership, etc.? As part of this exercise, descriptions of alternative mechanisms used in each project could be developed.

d. The codification of existing experience might be followed by a direct effort to explore, in a consistent fashion, the utility of alternative approaches within ongoing projects. By supplying expertise and budget supplements, so as to make possible more research activity than would be ordinarily feasible or required, researchers would be able to compare directly three or four strategies for answering specific questions. It should be possible to detail the activities required for each, the costs they entail, the type of results they obtain, their true validity (measured against an ideal baseline procedure, perhaps) and the demonstrated utility of their results to program adminstrators.

5.0 SYSTEM MAINTENANCE

5.1 Who are the actors?

The implementation of a communication system on a regional or national scale inevitably requires the active cooperation of people in many different localities. Such cooperation is necessary not only to launch new programs, but also to keep them running smoothly. The sheer physical distance separating the producers and the receivers of messages can create delays and misunderstandings. So, too, can the lack of direct contact between the various actors in the project (content specialists, mass media experts, extension agents, etc.) who have been linked to one another and to the client group through various iterations of the system model discussed above. The assumption that there will be a unity of interests among all potential participants in a new communication system is a naive one and such thinking can severely undermine operations as they expand to cover larger geographic areas.

Virtually all communication systems inaugurated in recent years have supported evaluation units of one kind or another. The ostensible purpose of such units has been to aid decision-makers through the provision of reliable data on program performance. Yet, the real value of such activity depends on the administrators' ability to anticipate potential problems and to commission research which examines the precise nature and causes of such problems. The aggregation and interpretation of feedback within most communication systems continues to be of a rather mechanistic and purposeless character, occasionally permitting administrators to identify problems, but only rarely providing the kinds of information necessary either to make inferences regarding the performance of individual system components or to

illuminate ways to overcome their weaknesses in the field.

The users of research and evaluation for system maintenance are not substantially different from those at the previous build-up phase. However, even if the actors are the same, their concerns are different. At this stage, the project has an operational model, one whose components, we hope, have been verified as they were installed. In any case, some system is working, and flexibility is likely to be limited. The goal for this phase is fine tuning and not, at least in the short run, major shifts in the role of major system components.

5.2 What are the decisions? What information is needed?

There are really three types of decisions being made once a project has reached the maintenance stage. First, there is the correction of foul-ups in project logistics: delays in the delivery of materials, arrangement of group sessions or maintenance of television or radio receivers. Second, there is the restructuring of particular components (short of their elimination) when they no longer are serving adequately: slowing the pace of broadcast instruction or changing the incentives for participation in the field. Finally, it may be necessary to augment or re-assign responsibilities within projects - for example, the development of new content materials or the incorporation of new audiences (rural mothers as well as semi-urban ones). Each category of decision demands a different research tack.

The correction of logistical problems is the only one of the three decision domains likely to be well served by feedback - that is, by the regular gathering and reporting of information from the field. The centrifugal character of communication projects often does cause administrators to lose control of vital components as they expand in size. It is imperative, therefore, that feedback strategies be installed to insure that all planned-

for events in the system model are actually taking place. Are the receivers working? Are the group sessions taking place? Are the materials arriving on time? Delivery mechanisms merit constant monitoring because they are likely to go wrong at any time. The monitoring usually can be done at reasonable cost and logistical failures may often be correctable without major increases in project cost.

Constant monitoring of a system's logistical or delivery components is justified because such information can be used. This is not true for information designed to influence the second type of decision.

Restructuring the role of a project component - slowing down the pace of mathematics instruction in broadcast lessons, for example - may also seem to justify constant monitoring. After all, constant knowledge about the level of mathematics learning would leave a project staff ready to deal with any shortfall as it occurs. However, for most developing country educational media systems, such regular monitoring would be both expensive, time consuming and of only marginal utility. Obtaining learning data six times a year on each of five broadcast subjects for each of five grade levels (as would have been required in a feedback system piloted in El Salvador) would require a minimum of five professional evaluators and a support staff of twenty. Such a staff could not have been employed, for to do so would have left no time for the myriad other research tasks of equal importance.

Since production lead time in educational media systems is, or ought to be, long, short term remediation capacity is quite limited. In other words, the potential for correcting observed weakness in the short run is small. Furthermore, knowing that learning is inadequate is not the same as knowing how to correct it. Guidance in locating a solution may require additional follow-up research. Finally, constant monitoring of learning

presupposes that learning success will vary from year to year for reasons other than those related to logistical failures. Assume that in the system build-up phase one had verified the effectiveness of the mathematics course. It is possible that as successive cohorts enter an instructional system, their background characteristics will change, and their capacity to make use of already-prepared programs will be reduced. Yet, such cohort change is likely to be slow. It would scarcely justify an expensive monitoring system to verify the effectiveness of an instructional unit in year two if that same unit had already been verified in year one.

In lieu of constant monitoring, component-restructuring decisions are likely to be best served by specially-mounted research projects designed to investigate particular system components. Such studies should be designed to estimate the effectiveness of the components, and to define just what, if anything, is wrong with them. They would be triggered on an irregular basis, either by suspicions of the project staff, by knowledge that changes in an audience make continuing effectiveness uncertain or, ideally, by a low level monitoring mechanism making use of informal feedback from field personnel. There is a risk that these triggering mechanisms would be inadequate and leave important problems undiscovered. That risk would be exacerbated if the materials production staff had little or no contact with field operations. In such situations, some regular investigation of essential project components might be necessary. Hoewever, the intervals between such investigations could be long.

The third type of decision - incorporation of new responsibilities - is not essentially different from the activities undertaken in the system build-up phase. As such, it is not a new issue and will not be considered further in this section.

5.3 What are the Research Questions?

5.3.1 Institutional Issues

1. Which system components justify constant monitoring; which ones will only benefit from irregular attention?

2. How can a project be made maximally open to new information? In part, this question asks what sort of information is likely to be most useful and credible with project staff and administrators; in part, it asks how can the leadership roles be structured so that they have flexibility, time and incentive to respond to information from the field.

Obviously, the answer to each of the above questions depends on the answer to the other, and each, in turn, will reflect the circumstances of a particular project. Implicitly, they call for a test of the hypothesis that regular monitoring of system effectiveness is not useful, that once effectiveness is established in the build-up phase, intensive study of particular components on an irregular basis is likely to be more valuable. Methods for examining these questions will overlap with those of previous sections.

a. A survey of experience, with intensive study of those cases which have had operating research units, is again the first order of business. Such a survey would attempt to locate what kinds of research results were and were not used and what factors in the organization of a project aided or blocked the easy utilization of results.

b. An attempt to reform existing research units - to serve both monitoring and special investigation needs - would be the next step. This effort could be associated with ongoing projects. In exchange for providing training of in-house researchers and technical expertise, investigators would request permission to observe, describe and define answers to this section's questions. Projects to receive such aid and observation could be sampled from a range of applications.

5.3.2 Methods Issues

The methods questions at this stage are less novel than the institutional issues. Essentially, they are identical in type to those proposed

for the system build-up phase. They involve alternative strategies for monitoring the implementation of system components and for focusing attention on special problems as they arise. The list of researchable questions in both areas would come from the activities previously described in this section.

6.0 SYSTEM REVIEW

6.1 Who are the actors?

In the introduction to this paper we argued that summative evaluation questions (e.g. "Did the system accomplish its objectives?" "Did it succeed?") do not command much attention among administrators of on-going projects. Were the answers to such questions made available in a timely fashion, and were they to contain information which bore directly on the performance of one or more system components, adminstrators might consider taking corrective action. Generally speaking, however, administrators do not have the flexibility (or the willingness) to respond to summative judgments concerning their own system's impact. Who, then, is concerned with overall questions of system impact?

We can identify three groups of decision-makers who are or should be concerned with system impact information. First, there are funding agency officials and policy planners who are explicitly concerned with replication and technology transfer. What does the experience with mathematics instruction by radio in Nicaragua suggest for solving comparable educational problems in Thailand or in the Philipines? Secondly, there are policy makers who are considering the expansion of pilot projects. What does the pilot experience with mathematics education by radio suggest about the promise of a nation-wide radio mathematics program? Finally, there are newly appointed policy makers, individuals without commitment to specific projects, who may wish to set a fresh agenda by radically altering or eliminating the programs of previous administrations.

6.2 What are the decisions?

For all three groups, the essential decision involved is whether or not to sponsor a project in a new environment. The choices will rarely, if

ever, be to replicate an existing model exactly. Inevitably, new or expanded systems will operate under circumstances which are quite different from existing ones. The real question is what lessons does an existing system hold that are transferable to new environments. Obviously, the magnitude of environmental differences between existing and proposed projects will have a great deal to do with the transferability of experience. Furthermore, planners of systems in new settings will have more uncertainty than those who are working on extensions of existing ones. However, in both cases important inferences will be required. One might argue, for example, that differences in setting and audience between the model system and some proposed new system are so minor as to present no obstacle to transferability. Or, more commonly, one might argue that specified changes in the system's operational model will be sufficient to eliminate any problems caused by such setting and audience differences. In either case, an adequate understanding of just how the effectiveness of an operational model is likely to vary with changes in setting and audience is required. It is not enough to know that a particular approach succeeded, even if it is accomplished by a description of the environment in which it worked. Somehow, evaluators who want to be helpful to future projects must be able to convey in some detail what the nature of the interaction between treatment and environment was.

This perspective is reinforced when we recall that operating systems are a product of both 'objective,' technical decisions and negotiation among interested parties. Planners of new systems will not want to transfer unnecessary baggage. Nor will they want to adopt an existing model in toto if some of its components are not required in a particular setting. Just as surely, political forces in the new environment will shape the operational

model that is eventually implemented. In both situations, detailed knowledge of each component's role in the existing system will be necessary.

6.3 What information is required?

In seeking policy guidance from an existing system, the researcher must ask: how did it work, for whose benefit, at what cost, and under what conditions? The "how did it work" question reinforces the need to gather evidence parallel to what we referred to as model verification research in the system build-up section. Once a system becomes fully operational, evaluators may estimate the contribution of each of its components to overall success. Of course, in some sense this may be an impossible task; the effects of the various components are almost always confounded. Yet, one does not require precise estimates of ultimate contribution to be helpful, and it should at least be possible to determine if major components operated more or less as originally planned.

A second type of information may be used to address the "for whose benefit" question. There is likely to be a great deal of individual and group variation in reaction to educational media programs. While much of this may be idiosyncratic, some variation is almost surely related to identifiable audience characteristics - skills in decoding new information, antecedent behaviors and the social and economic incentives supporting them, physical access to complementary information sources, etc. By pinpointing which segments of an audience respond to a project, research findings can provide planners with a tool for estimating the likely effectiveness of similar systems on different groups. An important aspect of this analysis would involve examination of the background resources (cognitive, attitudinal and material) participants brought to the project as well as the benefits

they received.

The third area of concern is that of costs. Much has been written in recent years on estimating costs (Jamison, Klees and Wells, 1978; Eicher and Orivel, 1977) and for that reason less attention will be required here. However, in parallel with previous comments, we note that straight-forward, "how much did the project cost" inquiries (even with appropriate social discount estimates built in) are limited in the same way that "Did the project succeed?" kinds of questions are limited. Overall cost figures are of little use in the planning of projects for new environments. Factor prices may be different (salaries higher or lower, cost of capital higher), the mix of factors may change, and the time structure of utilization may be faster or slower. In the future, analysts should disaggregate costs as much as possible so that they can be scrutinized and, where necessary, recombined by planners to suit different circumstances.

The fourth type of information useful for the planning of future projects is institutional in character. What kinds of leadership are required at different stages of a project; what mechanisms encourage coordination between production and field utilization agencies; what management strategies optimize productivity; what institutional arrangements enable a project to achieve some permanence; how can responsiveness to participant concerns be maintained over the long run? Such questions are among the most difficult to answer - particularly in the context of a single project. To begin with, there is the difficulty of adequately describing the institutional arrangements that characterize any single project. Official organization charts, displaying the internal hierarchy and the external links of a project, may only hint at true organizational relationships and loyalties. Informants can report their perception of key institutional arrangements,

but here there is high risk of bias.

Even were one able to describe them adequately, assessing the consequences of institutional arrangements is a conceptually troublesome activity in the context of a single project. Even when a project is governed by a single set of institutional arrangements, there is no logical way, within the context of that project, of determining what would have happened had it been implemented differently. Troublesome or not, this is essential information for planners of new projects. How to get it raises the next issue - the need to look beyond the borders of a single project.

As long as we maintain the fiction that the administrators of on-going projects are the prime users of summative evaluations, single project studies will continue to dominate our field. The planners of new projects (and to a lesser extent the extenders of old ones) do not really want detailed descriptions of projects. Rather, they wish to know what prior experience, accumulated across a number of projects, can suggest about how best to conduct a new project. In other words, they do not want evaluations of projects; they want evaluation of promising solutions to particular social problems. Admittedly, sometimes that information can come from single project evaluations. More often, however, it will come from evaluations which explicitly compare projects. Institutional issues, as we have already suggested, are particularly well-suited to cross-project investigations.

6.4 What are the research questions?

6.4.1 Institutional Issues

1. What types of information derived from the experience of other projects can the planners of new projects actually use? Which decisions are essentially technical and likely to be influenced by credible data from those projects? Which decisions, although subject to political demands, will be made more reasonably if competing constituencies have a clear-eyed and data-based picture of the likely consequences of their actions?

This research question is similar to the second one posed in the policy definition section. It should result in suggestions for what kinds of information ought to be made available to future planners. Accordingly, an important element of this research would be a description of the relevance (as perceived by planners) of types of information derived from earlier projects. One suspects, for example, that information about capital costs is likely to be accepted as more locally relevant than information about the tendency for production staffs to become isolated from the field. Evidence that indeed there is variation in perceived relevance would have two implications for future research: (1) a de-emphasis on issues for which little credit is likely to be given to externally-gathered information, and, concurrently, (2) an affirmation of the need for rigorous cross-case comparisons and replications which do provide such information perceived as relevant.

The second institutional research question assumes that the cross-project evaluation perspective of this paper is adopted. The problem then is putting it into practice.

> 2. What institutional mechanisms are available for funding cross-project evaluations? Funding for evaluations is most often tied to particular projects - often because funders want an accounting. Are there likely funders for genuine cross-project evaluations? What are the forces that keep funders' eyes on the project at hand? Will those forces mean that all cross-project evaluation is post hoc - aggregating independent evaluations to make inferences?
>
> 3. What institutional mechanisms are there for planning cross-project evaluation? How can an agenda of evaluation questions be generated, so that whether cross-project evaluation is done directly, or by aggregation of independent evaluations, there is some assurance that evidence will accumulate and address significant planning issues?

It would be helpful to have some review of previous evaluations, with an eye to the function they served to their funders. Previous attempts at cross-project evaluation would be particularly informative. Interviews

with major 'natural' funders of cross-project research (foreign assistance agencies, international organizations, and foundations) could give a richer picture of the constraints on such research. However, specific answers to questions about optimal future institutional mechanisms are likely to be the product of speculation and not direct research.

6.4.2 Methodological Issues

We conclude by raising three sets of essentially methodological questions, the answers to which should help media researchers and planners work more compatibly in the future.

4. Is it feasible to isolate the effects of particular project components or, more specifically, their interactions with aspects of of the setting in which they occur? At what level can such isolation take place; is it restricted to a few very general categories of characteristics (e.g. groups versus no groups, coordinating agency versus single implementing agency) or is there some possiblity of working with better differentiated categories (audience groups led by local volunteers to reinforce independently broadcast radio messages versus no reinforcing leaders in the same circumstance)?

5. What are the limits of cross-project generalization? In other words, to what extent can the goal of cross-project research -improving the next project down the line - be realized better in the context of single project versus multiple studies project. While institutional arrangements may be unique to a given project, and thus not profitably investigated within those confines, other research questions - such as the interaction of audience characteristics and component effects - may be usefully examined within a project. Obviously, there are advantages to replicating results across different projects. To what extent they outweigh the utility of results from intensively studied single projects is an empirical question.

6. What are the appropriate methods for doing cross-project evaluation on such planning issues as: a) participation of local groups in the definition of project goals, b) coordination of broadcast and non-broadcast activities, c) design of content for various media and d) orientations and training of field workers? On the one hand, methods can include quantitatively coded characterizations or descriptors gathered from a large sample of projects which are used to predict output (see Morss et al, 1976, for an example of this). On the other hand, a series of independent qualitative evaluations may be used by experienced case study analysts to make informed judgments. In the middle are a series of independently sponsored evaluations which share a list of research questions and methodological approachers, but which continue to examine individual projects with some degree of autonomy.

Middle courses always sound best, and we cannot deny some preference for them. However, they are not without problems: funding may be difficult to secure for evaluations of this kind, agreement on specific research and methods questions may be difficult to reach, and equivalent implementation of research designs may be difficult to realize if independent institutions are made responsible for each sub-evaluation. Depending on the issue, methods for doing cross-project research may well vary.

For the kinds of questions listed in issue #6 above, available research should be reviewed. Problems of making inference from available data should be defined and should lead to a description of the additional data that would be required to make confident inference. With such judgments in hand, a group of researchers could develop a set of additional strategies for answering each of the specific questions. Some strategies ought to emphasize study of one or more projects intensively; others independent evaluations across a range of projects; and still others relatively superficial data collection from a large number of projects. It may be possible, a priori, to eliminate some approaches as not-promising, and make some judgment about the logical utility of others given past experience.

The last step could involve direct comparison of the alternative strategies. Obviously, this would be sharply limited in both the number of specific research questions and in the number of alternative approaches to be investigated. Both questions and methods ought to be chosen to represent potential planning issues. The productivity of each approach, given its cost and yield in information perceived relevant to new projects, could then be reviewed and debated at conferences of planners, project administrators and researchers.

EPILOGUE: Additional Issues Raised at the Workshop

Participants in the Workshop noted the useful but limited perspective adopted by the authors of the working paper. Anthony Bates of the British Open University and Hernando Bernal of Colombia's Acción Cultural Popular(ACPO) questioned the emphasis given educational media projects and, specifically, the evaluation activities recommended to help new projects reach some maintainable levels of acceptability and effectiveness. Such an approach, most participants seemed to agree, did not deal adequately with the complex institutional environments and circumstances out of which most projects emerge. Bates, especially, argued that there are important differences between evaluation activities undertaken in behalf of media projects and those undertaken for larger, multi-faceted educational institutions. By way of example, he contrasted individual projects, which tend to have a limited life, no permanent budget, and relatively fixed and narrow objectives with fully develop and multi-faceted media systems, such as the Open University, which differ substantially on such characteristics.

While the functions of research and evaluation may resemble one another closely, whether one is project or institution-oriented, the weighting and timing of such functions may vary widely. So, too, may the needs and expectations of decision-makers within an institution during different stages of a project's life. Alan Hancock of the IIEP underscored this point when he argued that since the underlying legitimacy of institutions are rarely threatened by individual project evaluations, the leaders of those institutions are usually more receptive to evaluation data that implies a major reformulation of project elements than are the administrators of those projects who must cope with a myraid of day to day pressures.

Whereas a number of participants suggested other ways in which the functions of evaluation and research differ with regard to institutional versus project requirements, Thomas Cook of Northwestern University and Emile McAnany of the University of Texas pointed out that the project-focused evaluation activities proposed in the working paper should be viewed as but one approach to the problem of estimating the value of various educational interventions or reforms. Cook then identified various types of evaluation. The most familiar type, and the one that received most attention in the working paper he noted, was the single project evaluation. At a slightly more abstract level is the evaluation of programs. It customarily tries to determine whether or not a broadly defined way of solving a particular educational problem (teaching primary mathematics via radio, for example), is effective across a number of environments. This, in fact, was the approach advocated in the last section of the working paper, the one dealing with impact evaluation. At an even greater level of abstraction, there is the evaluation of entire sectoral programs: primary education, agricultural extension, rural health care, etc. According to Cook, it recognizes the inevitable consequences of heterogeneous implementation and utilization patterns and, at the same time, seeks to determine whether or not coarsely defined program initiatives can reach intended audiences and be effective (or even survive) under widely varied local conditions. Finally, there is policy evaluation. It is concerned with the utility (the predictive and explanatory power) of the theories which underlay, either explicitly or implicitly, particular programs. At the outset of the working paper, such policy evaluation and review was advocated as the first essential step to effective project planning. If adequately conducted, such research

can provide a vital feedback loop and, at the same time, encourage decision-makers to reflect critically on the assumptions as well as the results of previous projects.

The last major critique of the Working Paper put forward by the participants was the authors' incomplete appreciation of the nature of the decision-making environment within agencies responsible for developing and administering educational media projects. Clifford Block of the U.S. Agency for International Development expressed the view that most of the decision-makers' work is concentrated not on the formulation of policy, but rather on the "practical context" of making the best use of a very limited supply of resources." If, as most participants seemed to agree, the bureaucratic environment out of which educational media decisions flow is governed more by the competition for resources than by the systematic enactment of policy, the researchers' task is made even more complex and challenging than the paper indicated. João Oliveira of Brazil's Financiadora de Estudios e Projetos emphasized this point, arguing that the key to understanding all educational media projects lay in their administrative environments. Survival is the guiding interest of most bureaucracies, he claimed, and all evaluation activities must be guided by that perspective.

Given the complexity of the decision-making environment, can researchers ever be sure that their efforts are appreciated or even taken seriously? The participants seemed to agree that research and evaluation rarely affect projects directly. A far more familiar phenomenon is the evaluator's complaint that so little attention is paid to his or her efforts. While such a lament seems justified, at least in the short run, it ignores the many ways research and evaluation can and do affect projects

indirectly. Over time, and across projects, results accumulate. Although planners may not make any direct reference to previous projects or their evaluations, their decisions about new projects do seem to be influenced by what has gone before. Such influence is transferred subtlely, through internal memoranda and, even more importantly, through the interpersonal communications of people who have been active in a given field for some time. Information transfered in these ways may become seriously distorted and/or overly generalized, but the effects of its influence are apparent nonetheless. For this reason, a better understanding of the political and administrative incentives which drive decision-makers could aid evaluators immensely, both in the design of their studies and in the selection of more appropriate strategies for conveying their findings.

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APPENDIX B: WORKSHOP AGENDA

Sunday, Oct. 26	Participants arrive
Monday, Oct. 27	
9:00 AM (Keen Bldg. - 7th flr.)	Introductions and Orientation Alan Hancock and John Mayo
10:30 AM	*Coffee*
11:00 AM	Review of Discussion Paper, "Research Priorities for the Planning of Educational Media" Bob Hornik and John Mayo
12:30 PM	*Lunch*
2:00 PM	Evaluation as a Policy Instrument Animateur: Emile McAnany Resource persons: Cliff Block Tom Cook João Oliveira
3:30 PM	*Refreshments*
4:00 PM	Discussion
6:30 PM	*Reception*
8:30 PM	*Dinner*

Tuesday, Oct. 28

9:00 AM	Issues in System Planning Evaluation	
	Animateur:	Hernando Bernal
	Resource persons:	Alan Hancock
		Heather Hudson
		Bob Morgan
10:30 AM	*Coffee*	
11:00 AM	Discussion	
12:30 PM	*Lunch*	
2:00 PM	Formative Evaluation of Educational Media	
Starry Conf. Rm. (220 Bus. Bldg.)	Animateur:	Roy Colle
	Resource persons:	Tony Bates
		Bella Mody
		John Tiffen
3:30 PM	*Refreshments*	
4:00 PM	Discussion	
7:00 PM	*Dinner*	

Wednesday, Oct. 29

9:00 AM — Issues in System Impact Evaluation

Animateur: Doug Goldschmidt
Resource persons: Dennis Foote
Dick Martin
Francois Orivel

10:30 AM — Coffee

11:00 AM — Discussion

12:30 PM — Lunch

2:00 PM — Elective Discussion Groups

A. Policy Definition and System Planning: Research Priorities

Rapporteur: João Oliveira

B. System Build-up and Maintenance: Research Priorities

Rapporteur: Barbara Searle

C. System Impact and Costs: Research Priorities

Rapporteur: Steve Klees

8:00 PM — Dinner

Thursday, Oct. 30

9:00 AM	Elective Group Reports and Recommendations
10:30 AM	Coffee
11:00 AM	Concluding Session: Recommendations to IIEP for Future Planning, Research, and Training Activities

Friday, Oct. 31 — Participants depart